

Amendments to the claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 15, 16, 19, 20 are amended. Claims 21-24 are new.

Listing of Claims:

1-12 (cancel)

13. (original) A rear-projection display comprising a spatial modulation element, and a rear-projection screen on whose surface on a light-projected side an image formed by the spatial modulation element is projected so that the image is observed from an image-observed side opposite to the light-projected side,

wherein the rear-projection screen includes a first screen element for converting projected light from the spatial modulation element into substantially parallel light, and a second screen element for diffusing the substantially parallel light,

wherein the second screen element includes a lenticular lens array that is provided on the surface on the light-projected side and whose lengthwise direction is directed in a vertical direction, a diffusing layer provided at the image-observed side of the lenticular lens array, and a transparent layer provided between the lenticular lens array and the diffusing layer,

wherein a distance t_1 between a light-projected-side surface of the diffusing layer and a focal plane of the lenticular lens array satisfies Formula II-1 below, and a distance t_2 between an image-observed-side surface of the diffusing layer and the focal plane of the lenticular lens array satisfies Formula II-2 below:

Formula II-1: $t1 \geq f1$

Formula II-2: $t2 \leq f1 \times Pg/P1$

where $f1$ represents a distance between a valley of the lenticular lens array and the focal plane, Pg represents a pixel pitch on the screen, and $P1$ represents an array pitch of the lenticular lens array.

14. (original) A rear-projection display comprising a spatial modulation element, and a rear-projection screen on whose surface on a light-projected side an image formed by the spatial modulation element is projected so that the image is observed from an image-observed side opposite to the light-projected side,

wherein the rear-projection screen includes a first screen element for converting projected light from the spatial modulation element into substantially parallel light, and a second screen element for diffusing the substantially parallel light,

wherein the second screen element includes a lenticular lens array that is provided on the surface on the light-projected side and whose length-wise direction is directed in a vertical direction, a diffusing layer provided at the image-observed side of the lenticular lens array, and a transparent layer provided between the lenticular lens array and the diffusing layer,

wherein a distance $t1$ between a light-projected-side surface of the diffusing layer and a focal plane of the lenticular lens array satisfies Formula II-1 below, and a distance $t2$ between an image-observed-side surface of the diffusing layer and the focal plane of the lenticular lens array satisfies Formula II-3 below:

Formula II-1: $t_1 \geq f_l$

Formula II-3: $t_2 \leq P_g/2/\tan(\gamma_i)$

where f_l represents a distance between a valley of the lenticular lens array and the focal plane, P_g represents a pixel pitch on the screen, and γ_i represents an in-layer equivalent angle in the transparent layer that is obtained by converting an observation angle γ at which a luminance of 1/10 of that in a normal direction is obtained due to diffusion caused by the diffusing layer, and is expressed as Formula II-4 below:

Formula II-4: $\gamma_i = \arcsin(\sin(\gamma)/n)$

where n represents a refractive index n of the transparent layer.

15. (currently amended) The rear-projection display according to claim 13 ~~or 14~~, wherein the first screen element is a Fresnel lens sheet made of a transparent material containing substantially no diffusing material.

16. (currently amended) The rear-projection display according to claim 13 ~~or 14~~, wherein a light absorbing layer is provided on a light non-transmission portion in a vicinity of the focal plane of the lenticular lens array of the second screen element.

17. (original) A rear-projection screen on whose surface on a light-projected side an image formed by a spatial modulation element is projected so that the image is observed from an image-observed side opposite to the light-projected side, the rear-projection screen comprising:

a first screen element for converting projected light from the spatial modulation element into substantially parallel light; and

a second screen element for diffusing the substantially parallel light,

wherein the second screen element includes a lenticular lens array that is provided on the surface on the light-projected side and whose length-wise direction is directed in a vertical direction, a diffusing layer provided at the image-observed side of the lenticular lens array, and a transparent layer provided between the lenticular lens array and the diffusing layer,

wherein a distance t_1 between a light-projected-side surface of the diffusing layer and a focal plane of the lenticular lens array satisfies Formula II-1 below, and a distance t_2 between an image-observed-side surface of the diffusing layer and the focal plane of the lenticular lens array satisfies Formula II-5 below:

Formula II-1: $t_1 \geq f_l$

Formula II-5: $t_2 \leq f_l \times P_1 \times 0.7$

where:

f_l represents a distance between a valley of the lenticular lens array and the focal plane, and P_1 represents an array pitch of the lenticular lens array; and

a unit of t_1 is according to that of f_1 , and a unit of t_2 is millimeters.

18. (original) A rear-projection screen on whose surface on a light-projected side an image formed by a spatial modulation element is projected so that the image is observed from an image-observed side opposite to the light-projected side,

the rear-projection screen comprising:

a first screen element for converting projected light from the spatial modulation element into substantially parallel light; and

a second screen element for diffusing the substantially parallel light,

wherein the second screen element includes a lenticular lens array that is provided on the surface on the light-projected side and whose length-wise direction is directed in a vertical direction, a diffusing layer provided at the image-observed side of the lenticular lens array, and a transparent layer provided between the lenticular lens array and the diffusing layer,

wherein a distance t_1 between a light-projected-side surface of the diffusing layer and a focal plane of the lenticular lens array satisfies Formula II-1 below, and a distance t_2 between an image-observed-side surface of the diffusing layer and the focal plane of the lenticular lens array satisfies Formula II-6 below:

Formula II-1: $t_1 \geq f_1$

Formula II-6: $t_2 \leq 0.35/\tan(\gamma_i)$

where:

f_l represents a distance between a valley of the lenticular lens array and the focal plane, and γ_i represents an in-layer equivalent angle in the transparent layer that is obtained by converting an observation angle γ at which a luminance of 1/10 of that in a normal direction is obtained due to diffusion caused by the diffusing layer, and is expressed as Formula II-7 below:

Formula II-7: $\gamma_i = \text{asin}(\sin(\gamma)/n)$

where:

n represents a refractive index n of the transparent layer; and

a unit of t_1 is according to that of f_l , and a unit of t_2 is millimeters.

19. (currently amended) The rear-projection screen according to claim 17 ~~or 18~~, wherein the first screen element is a Fresnel lens sheet made of a transparent material containing substantially no diffusing material.

20. (currently amended) The rear-projection screen according to claim 17 ~~or 18~~, wherein a light absorbing layer is provided on a light non-transmission portion in a vicinity of the focal plane of the lenticular lens array of the second screen element.

21. (New) The rear-projection display according to claim 14, wherein the first screen element is a Fresnel lens sheet made of a transparent material containing substantially no diffusing material.

22. (New) The rear-projection display according to claim 14, wherein a light absorbing layer is provided on a light non-transmission portion in a vicinity of the focal plane of the lenticular lens array of the second screen element.

23. (New) The rear-projection screen according to claim 18, wherein the first screen element is a Fresnel lens sheet made of a transparent material containing substantially no diffusing material.

24. (New) The rear-projection screen according to claim 18, wherein a light absorbing layer is provided on a light non-transmission portion in a vicinity of the focal plane of the lenticular lens array of the second screen element.